DETAILED ACTION

1. Acknowledgement is made of the amendment received on 4/26/10.

EXAMINER'S AMENDMENT

2. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Kenneth B. Leffler on 4/22/10.

The application has been amended as follows:

1. In claims:

(1) **Replace claim 1** with;

A method of estimating interference in a user equipment in a code division multiple access communication system, in which a pilot channel uses a scrambling code and the user equipment uses an alternative scrambling code on a dedicated channel determined by a channelization code, comprising the steps of:

the user equipment determining whether the user equipment knows of an empty channelization code m under the alternative scrambling code;

if the empty channelization code m is known to the user equipment, then the user equipment using the empty channelization code m for estimating the interference; and

if the empty channelization code m is not known to the user equipment, then the user equipment estimating the interference by determining a variance of symbols in at least two portions of the dedicated channel,

wherein the variance represents an average squared difference between complex amplitudes of despread received symbols in the at least two portions of the dedicated channel and a mean of complex amplitudes of despread received symbols in the at least two portions of the dedicated channel.

(2) In claim 13, lines 1-2, change, "**an** empty channelization code" to - - the empty channelization code - - ;

(3) In claim 14, line 2, change, "the terminal" to - - the user equipment- - ;

(4) In claim 14, line 3, change, "**a** variance of symbols" to - - the variance of symbols - - ;

(5) In claim 14, line 5, change, "**a** dedicated physical channel" to - - the dedicated physical channel - - ;

(6) In claim 14, line 6, change, "**a** despread received signal" to - - the despread received signal - - ;

(7) In claim 14, line 8, change, "**a** mean of a number" to - - the mean of a number - - ;

(8) **Replace claim 17** with;

A method of searching for an empty channelization code m in a user equipment in a code division multiple access communication system, comprising the steps of: the user equipment generating an initial interference estimate (I-estimate);the user equipment setting a threshold based on the initial I-estimate; the user equipment selecting a candidate empty channelization code m; for the candidate empty channelization code m, the user equipment forming an I-estimate; the user equipment comparing the formed I-estimate to the threshold; and if the formed I-estimate exceeds the threshold, the user equipment selecting another candidate empty channelization code and repeating the forming and comparing steps, otherwise the user equipment identifying the candidate empty channelization code m as an empty channelization code;

Wherein the formed I-estimate for the candidate empty channelization code m represents an average squared magnitude value computed from N symbols despread with respect to an applicable scrambling code and the candidate empty channelization code.

(9) In claim 18, line 2, change, “the terminal" to - - the user equipment- - ;

(10) **Replace claim 25** with;

An apparatus for estimating interference in a user equipment in a code division multiple access communication system, in which a pilot channel uses a scrambling code and the user equipment uses an alternative

scrambling code on a dedicated channel determined by a channelization code, comprising: controller circuitry that determines whether the user equipment knows of an empty channelization code m under the alternative scrambling code; and an interference estimator, wherein if the controller circuitry determines that the empty channelization code m is known to the user equipment, then the interference estimator generates an estimate of the interference based on the empty channelization code m; and if the controller circuitry determines that the empty channelization code m is not known to the user equipment, then the interference estimator generates the estimate of the interference based on a variance of symbols in at least two portions of the dedicated channel,

wherein the variance represents an average squared difference between complex amplitudes of despread received symbols in the at least two portions of the dedicated channel and a mean of complex amplitudes of despread received symbols in the at least two portions of the dedicated channel.

(11) In claim 29, lines 1-2, change, “the terminal" to - - the user equipment- - ;

(12) **Replace claim 30** with;

A **non-transitory** computer-readable medium containing a computer program for estimating interference in a user equipment in a code division multiple access communication system, in which a pilot channel uses a scrambling code and the user equipment uses an alternative scrambling

code on a dedicated channel determined by a channelization code,

wherein the computer program performs the steps of: determining whether the user equipment knows of an empty channelization code m under the alternative scrambling code; if the empty channelization code m is known to the user equipment, then using the empty channelization code m for estimating the interference; and if the empty channelization code m is not known to the user equipment, then estimating the interference by determining a variance of symbols in at least two portions of the dedicated channel,

wherein the variance represents an average squared difference between complex amplitudes of despread received symbols in the at least two portions of the dedicated channel and a mean of complex amplitudes of despread received symbols in the at least two portions of the dedicated channel.

(13) In claims 31 and 32, line 1, change, “the computer-readable medium " to - - the non-transitory computer-readable medium - - ;

(14) In claim 34, line 2, change, “**an** empty channelization code" to - - the empty channelization code - - ;

(15) In claim 35, line 3, change, “**a** variance of symbols" to - - the variance of symbols - - ;

(16) In claim 35, line 5, change, “**a** dedicated physical channel" to - - the dedicated physical channel - - ;

(17) In claim 35, line 6, change, "**a** despread received signal" to - - the despread received signal - - ;

(18) In claim 35, line 8, change, "**a** mean of a number" to - - the mean of a number - - ;

(19) In claim 36, line 2, change, "a terminal" to - - a user equipment- - .

Allowable Subject Matter

3. Claims 1-36 are allowed.

4. The following is an examiner's statement of reasons for allowance: The prior arts of record , Wang (US 20060154633) and Ishikawa et al (US 7193978) do not teach or suggest *the user equipment determining whether the user equipment knows of an empty channelization code m under the alternative scrambling code;*

if the empty channelization code m is not known to the user equipment, then the user equipment estimating the interference by determining a variance of symbols in at least two portions of the dedicated channel,

wherein the variance represents an average squared difference between complex amplitudes of despread received symbols in the at least two portions of the dedicated channel and a mean of complex amplitudes of despread received symbols in the at least two portions of the dedicated channel as recited in claims 1, 25 and 30.

the user equipment generating an initial interference estimate (I-estimate); the user equipment setting a threshold based on the initial I-estimate; the

terminal selecting a candidate empty channelization code m; for the candidate empty channelization code m, the user equipment forming an I-estimate; the user equipment comparing the formed I-estimate to the threshold; and if the formed I-estimate exceeds the threshold, the user equipment selecting another candidate empty channelization code and repeating the forming and comparing steps, otherwise the user equipment identifying the candidate empty channelization code m as an empty channelization code as recited in claims 17 and 36.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to HELENE TAYONG whose telephone number is (571)270-1675. The examiner can normally be reached on Monday-Friday 8:00 am to 5:30 pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Liu Shuwang can be reached on 571-272-3036. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information

for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Helene Tayong/
Examiner, Art Unit 2611

May 31, 2010

/Shuwang Liu/

Supervisory Patent Examiner, Art Unit 2611